Mirror symmetry: Symplectic geometry "is" algebraic geometry (but on a different space).

Symplectic space $(M,\omega)$, $\omega$ closed non-deg 2-form like $(\mathbb{R}^{2n}, \sum dx_i \wedge dy_i)$

A Lagrangian submanifold is an $n$-dim submanifold $LCM$ s.t. $\omega|_L = 0$.

Up to Hamiltonian isotopies [which sweep a Q-amount of area rel. $\omega$]

On surfaces:

Lagrangians.

Lagrangian Floer homology measures intersection of Lagrangians, has a product structure.

Lagrangians make the objects of " Fukaya Aoo category".

The algebraic side $\hat{M}$, coherent sheaves over $\hat{M}$, derived category $\mathcal{D}^b(\hat{M})$
should be “derived equivalent” to the symplectic side.

This is a colloquium! Why are we doing this?